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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,693	05/05/2006	Toshio Matsumoto	OKUDP0166US	4930

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EXAMINER

DANIELSEN, NATHAN ANDREW

ART UNIT

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2627

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/595,693	Applicant(s) MATSUMOTO ET AL.	
	Examiner Nathan Danielsen	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05/05/06, 10/19/07, & 08/22/08</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2627

DETAILED ACTION

1. Claims 1-10 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. Figures 1, 2, 3, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 4 recites the limitation "the reference voltage". There is insufficient antecedent basis for this limitation in the claim (i.e. claim 4 does not depend from claim 3, which includes the limitation "a reference voltage").

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sho (US Patent Application Publication 2003/0099178).

Regarding claims 1 and 10, Sho discloses a laser driving device (and associated laser driving method) comprising:

a laser driving section for supplying a driving current for causing a laser to emit light (element 15b in figure 3 and ¶s 33 and 34);

a temperature detecting section for detecting a temperature of the laser (element 40 in figure 3 and ¶s 33 and 34); and

a voltage control section for supplying a source voltage to the laser driving section while changing a voltage value of the source voltage in accordance with the temperature detected by the temperature detecting section (element 16 in figure 3 and ¶s 33 and 34),

wherein the laser driving section and the laser become operable with supply of the source voltage (¶ 34), and

the laser driving section supplies the driving current based on an instruction value (“error signal” output from element 15a and input to element 15b in figure 3 and ¶ 26) which is different from the voltage value of the source voltage (¶ 26; where the “error signal” is different from the “power supply voltage”).

Regarding claim 2, Sho discloses everything claimed, as applied to claim 1. Additionally, Sho discloses where the laser driving device further comprises a power control section for causing the laser to emit the light with a predetermined emission power by controlling the instruction value for the laser driving section so as to adjust the driving current supplied from the laser driving section (elements 15a in figure 3

Art Unit: 2627

and ¶s 33 and 34; where element 15a adjusts the driving current by supplying the error signal to element 15b).

Regarding claims 8 and 9, Sho disclose an optical disk apparatus for performing a data write and/or read operation with respect to an information recording layer of an optical disk (¶s 22 and 33), comprising:

- an optical head for radiating light toward the optical disk (inherent in ¶s 22 and 33), and
generating and outputting a servo signal based on light reflected from the information recording layer (inherent in ¶s 22 and 33 for the purpose of providing the optical disk apparatus with the functionality to “record data on the optical disc 1 or to reproduce data recorded on the optical disc 1”);

- a control signal generating section for generating a control signal for controlling a position of a focal point of the light based on the servo signal output from the optical head (inherent in ¶s 22 and 33 for the purpose of providing the optical disk apparatus with the functionality to “record data on the optical disc 1 or to reproduce data recorded on the optical disc 1”);
and

- a driving circuit for generating a driving signal based on the control signal (inherent in ¶s 22 and 33 for the purpose of providing the optical disk apparatus with the functionality to “record data on the optical disc 1 or to reproduce data recorded on the optical disc 1”),

wherein the optical head includes:

- a laser (element 11 in figure 3);

- a laser driving device for supplying a driving current for causing the laser to emit light
(element 15 in figure 3);

- an objective lens for converging light from the laser onto the information recording layer
(element 13 in figure 3);

- an actuator for adjusting a position of the objective lens based on the driving signal
(inherent in ¶s 22 and 33 for the purpose of providing the optical disk apparatus

Art Unit: 2627

with the functionality to “record data on the optical disc 1 or to reproduce data recorded on the optical disc 1”); and

a light-receiving section for receiving light reflected from the information recording layer and for outputting a signal which is in accordance with the amount of light (element 14 in figure 3),

wherein the laser driving device includes:

a laser driving section for supplying a driving current for causing a laser to emit light (element 15b in figure 3 and ¶s 33 and 34);

a temperature detecting section for detecting a temperature of the laser (element 40 in figure 3 and ¶s 33 and 34); and

a voltage control section for supplying a source voltage to the laser driving section while changing a voltage value of the source voltage in accordance with the temperature detected by the temperature detecting section (element 16 in figure 3 and ¶s 33 and 34),

wherein the laser driving section and the laser become operable with supply of the source voltage (¶ 34), and

the laser driving section supplies the driving current based on an instruction value (“error signal” output from element 15a and input to element 15b in figure 3 and ¶ 26) which is different from the voltage value of the source voltage (¶ 26; where the “error signal” is different from the “power supply voltage”).

Art Unit: 2627

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sho, in view of applicant's admitted prior art (hereinafter the AAPA).

Regarding claim 3, Sho discloses everything claimed, as applied to claim 2. However, Sho fails to disclose where the laser driving device further comprises a setting section for instructing a setting of a reference voltage in accordance with an amount of light to be emitted by the laser.

In the same field of endeavor, the AAPA discloses where the laser driving device further comprises a setting section for instructing a setting of a reference voltage in accordance with an amount of light to be emitted by the laser (element 306 in figure 3 and ¶ 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Sho with that of the AAPA, for the purpose of appropriately controlling the emission power of a semiconductor laser for either reproducing or recording information from or on a recording medium (¶ 14).

11. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sho.

Regarding claim 4, Sho discloses everything claimed, as applied to claim 2. Additionally, Sho discloses where the laser driving device further comprises an emission power detecting section for detecting a value which is in accordance with the emission power of the laser and for outputting a signal corresponding to the value (element 14 in figure 3 and ¶ 24; where element 14 outputs a signal at least proportional to detected light emitted by element 11), wherein the power control section controls an instruction value to the laser driving section based on an electrical characteristic of the signal output from

Art Unit: 2627

the emission power detecting section, and a reference electrical characteristic, in such a manner that the electrical characteristic of the signal equals the reference electrical characteristic (§ 25).

However, although Sho does not explicitly disclose where the electrical characteristic and the reference electrical characteristic consist of a voltage and a reference voltage, respectively, one of ordinary skill in the art at the time the invention was made would have found it obvious to have modified the apparatus of Sho by including a pair of current-to-voltage converters to convert the reference current provided by element 17 and the output current of element 14, for the purpose of utilizing a simple comparator circuit to compare these electrical characteristics (§s 25 and 26; where the current-to-voltage converter is well known, as shown in figure 3 of the AAPA (note element 304)).

Regarding claim 5, Sho discloses everything claimed, as applied to claim 4. Additionally, Sho discloses where characteristics between an operating voltage, which is necessary for the laser to operate, and the driving current differ depending on temperature (figure 7 shows where increases in the temperature of the laser cause increases in the current required to emit the same amount of light and §s 33 and 34 disclose where the voltage is adjusted to compensate for the increased power consumption caused by the increased current, which has been caused by the increased temperature of the laser); and the voltage control section determines the voltage value of the source voltage based on the driving current and the characteristics (§s 33 and 34).

Regarding claim 6, Sho discloses everything claimed, as applied to claim 5. Additionally, Sho discloses where the operating voltage increases as the temperature decreases; and the voltage control section supplies a higher source voltage as the temperature decreases (figure 7 shows where increases in the temperature of the laser cause increases in the current required to emit the same amount of light and §s 33 and 34 disclose where the voltage is adjusted to compensate for the increased power consumption caused by the increased current, which has been caused by the increased temperature of the laser; knowing that power (P) is equal to the current (I) through the laser multiplied by the voltage (V) across the laser (where $P = I \cdot V$), an increase in the current through the laser would require a decrease in the voltage across the laser in order to maintain the same power consumed by the laser; therefore, if the

Art Unit: 2627

current through the laser decreases due to a temperature decrease, the voltage would need to be increased to maintain the power consumption of the laser).

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sho, in view of Matsushita et al ("A Blue-Violet Laser for Optical Disc", by Toshio Matsushita et al., OPTRONICS, 2003 May issue, pp.120-123; hereinafter Matsushita).

Note: the aforementioned reference to Matsushita was cited by applicant in the Information Disclosure Statement filed 05 May 2006 under "Other Art".

Regarding claim 7, Sho discloses everything claimed, as applied to claim 1. However, Sho fails to disclose a wavelength of the light emitted by the laser.

In the same field of endeavor, Matsushita discloses where the laser driving section outputs the driving current for causing a laser whose wavelength is within a range from 400 nm to 430 nm to emit light (the paragraph immediately following the box with the number "2" in it in column 1 on page 120, in combination with the paragraph in the second column of page 123 that is entirely in English).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Sho with that of Matsushita, for the purpose of recording/reproducing information on/from Blu-ray discs (the paragraph in the second column of page 123 that is entirely in English).

Relevant Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Mikuriya et al (US Patent 4,832,487) disclose an apparatus comprising a controller for driving a lens actuator in accordance with the output of a light receiving element to operate a focus servo mechanism.

Art Unit: 2627

Closing Remarks/Comments

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571)272-4248. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrea L Wellington/
Supervisory Patent Examiner, Art Unit
2627

/ND/
10/22/2009